COMMONWEALTH OF AUSTRALIA

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CHARLES DARWIN UNIVERSITY

Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2016

FINAL EXAMINATION	**DURATION**
QAB105 – Quantitative Analysis for Business	Reading Time: **10** minutes Writing Time: **180** minutes

INSTRUCTIONS TO CANDIDATES

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

Any hard copy, unannotated English dictionary is permitted

ADDITIONAL AUTHORISED MATERIALS	**EXAMINATION MATERIALS TO BE SUPPLIED**
No additional printed material is permitted	1 x 16 Page Book 1 x Scrap Paper Formula Sheet/s Statistical Table/s

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Section A

Multiple Choice Questions

Total No of Marks for this section: 10 marks

This section should be answered in the answer booklet provided.

Marks for each question are indicated.
Suggested Time allocation for Section A: 30 minutes

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Section B

Short Answer Questions

Total No of Marks for this section: 40

This section should also be answered in the Answer Booklet provided.

Marks for each question are indicated.
Suggested Time allocation for Section B: 150 minutes

Question 1

The marketing division of Good life Tires determined the average (mean) life of tires to be 30,000km with a standard deviation of 5,000km. Given that tire life is a normally distributed random variable, find the following:

a) The probability that tires last between 25,000 and 35,000km.

b) The probability that tires last between 28,000 and 33,000km.

c) The probability that tires last more than 35,000km.

(Marks: 10)

Question 2

The manager of quality assurance for a division that produces hair dryers is interested in the average number of switches that can be tested by the division's employees. Assuming that the number of switches that are tested each hour by an employee follows a normal distribution (centred at μ), the manager wants to estimate μ with 90% confidence. Also, this estimate must be within one unit (switch) of μ. The manager estimates that H is 45 switches and L is 25 switches. How large a sample will be necessary?

(Marks: 5)

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Question 3

Consider the example where the average net income for all sole proprietor CPA's was found to be $74,914 in a survey done five years ago. A new survey is conducted by taking a random sample of 112 currently, practising sole proprietor CPA's to determine if this average net income figure has changed. The sample average net income is calculated to be $78,695, and it is known that the population standard deviation of net incomes for sole proprietor CPA's is $14,530. Use the sample data to establish if there is sufficient evidence to conclude that the average net income for sole proprietor CPA's has changed in the last 5 years.

(Marks: 10)

Question 4

The output and scatterplot are the regression of total passengers in June of 2005, for various airlines at an international airport. A few of the airlines are identified by name.

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The regression equation is
Passengers2005 = 13000 + 0.836 Passengers2004
Predictor          Coef     SE Coef          T        P
Constant          13000        7464       1.74    0.108
Passengers2004   0.836      0.2652       3.15    0.008
S = 20000        R-Sq = 45.3%     R-Sq(adj) = 40.7%
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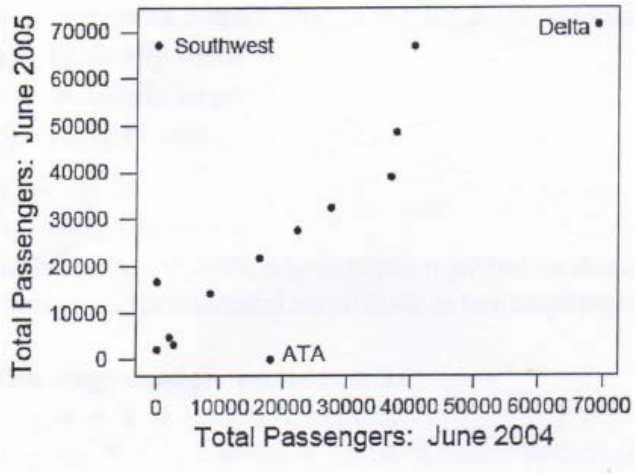

a) What is the approximate value of the correlation r?

(Marks: 2)

b) Only one of the airlines was identified as an outlier, with an unusually large residual, which was it?

(Marks: 2)

c) If Delta were removed from the regression, what would happen to r?

(Marks: 2)

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d) United had 40,000 passengers in June of 2004. Use the regression line to predict United's number of passengers for June of 2005.

(Marks: 3)

e) In fact, United had 67,000 passengers in June 0f 2005. What is the residual (prediction error) for your prediction in part (iv)?

(Marks: 3)

f) What does the regression output information suggest about the prediction error?

(Marks: 3)

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